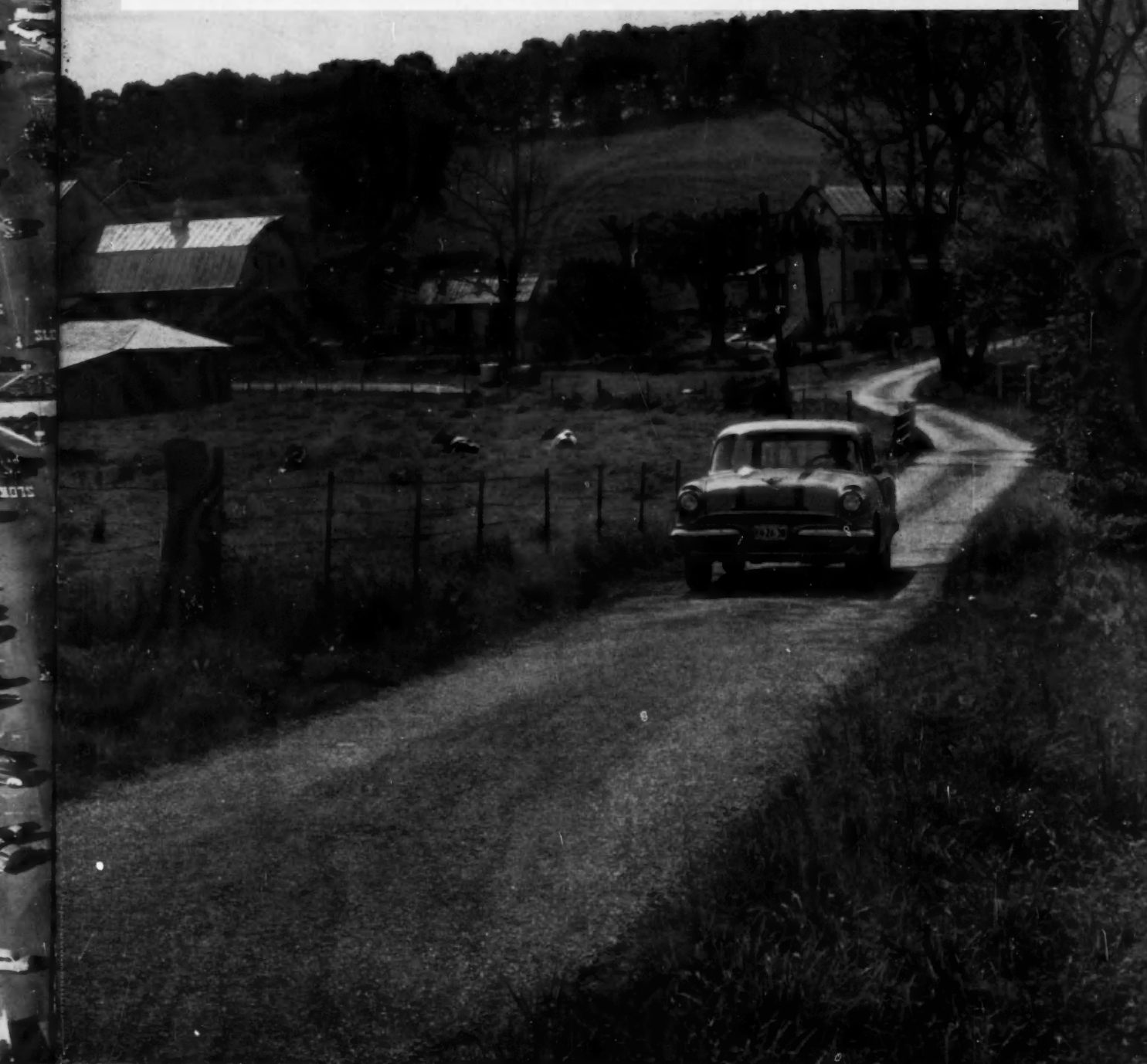


# ASPHALT INSTITUTE

*Quarterly*

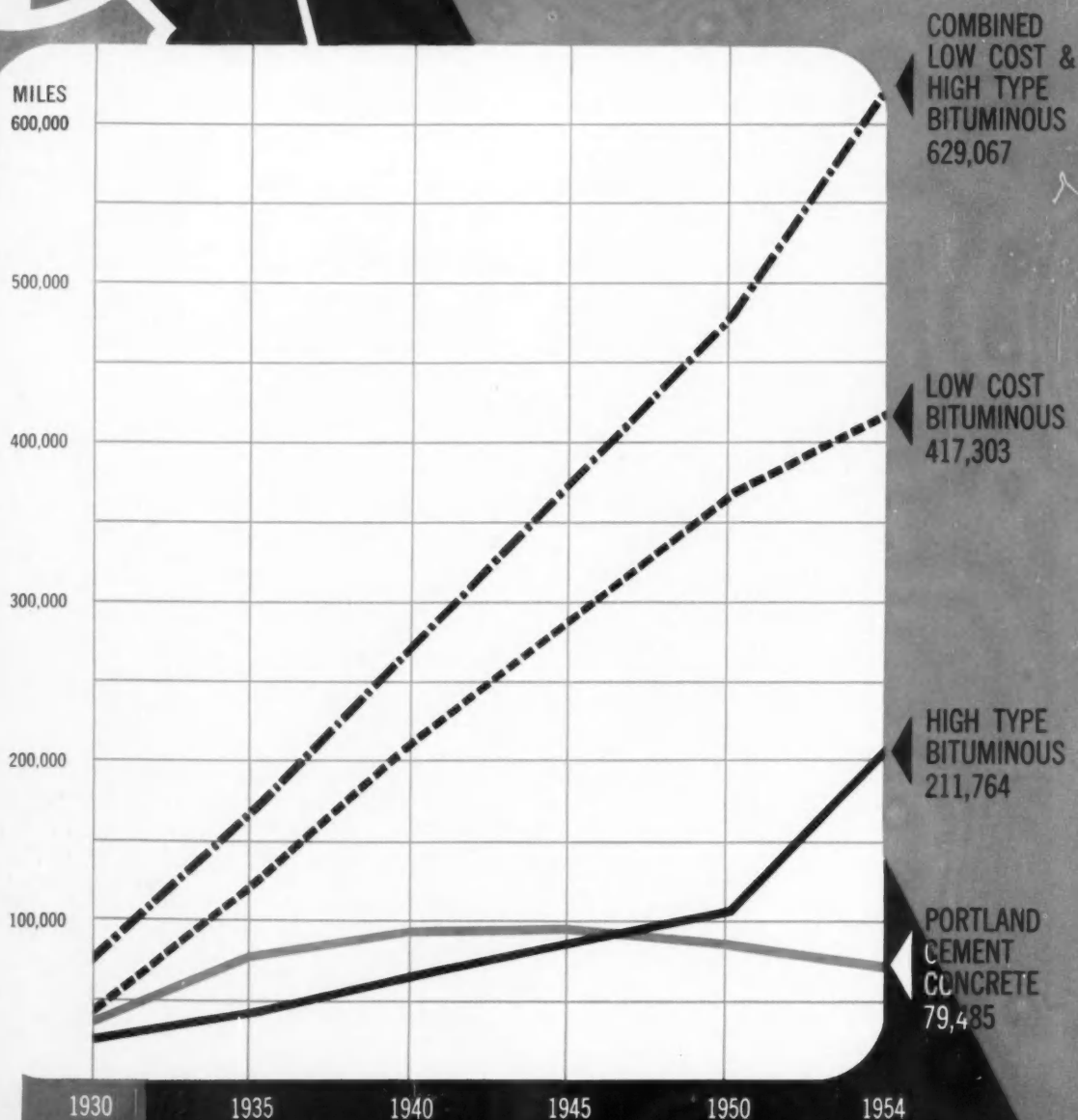
July, 1956



# EXISTING SURFACED MILEAGE ON RURAL ROADS

**BITUMINOUS TYPES AND  
PORTLAND CEMENT CONCRETE**

88% of total paved rural mileage in U.S.A.  
is surfaced with bituminous paving types



Sources: U.S. Bureau of Public Roads for all rural roads, 1950 and 1954.  
American Association of State Highway Officials for rural roads  
on state systems, 1930, 1935, 1940 and 1945.

CHARTED BY THE ASPHALT INSTITUTE

# ASPHALTOPICS

Illinois' Cook County Highway Department has in use a new highway striper that can do just about everything but paint pictures on the pavement. Equipped with many features for convenience and speed of operation, it can do all the striping on a three or four-lane expressway at one pass. The assembly consists of a truck with large paint storage tanks, air compressor and pump, and a tractor that carries four paint guns and three mechanical dispensers of glass beads for night time reflectivity. It even has a two-way intercom making it possible for the truck driver to warn the trailer operator of any change coming up in the road pattern or to pass any other information back and forth.

Now in its third month of publication and on press for a second printing is the new Asphalt Institute manual, *Mix Design Methods for Hot-Mix Asphalt Paving* (Manual Series No. 2). This 168-page book contains authoritative information and instruction on the design of mixes by the Marshall, Hveem, Hubbard-Field, and Smith Triaxial Methods. It also includes sections on required testing equipment, preparation of specimens, test procedure and interpretation of test data for each of the mix-design methods, as well as other useful information. Inquire about it at your nearest Asphalt Institute office.



Baltimore's extensive street resurfacing program is still rolling along at the rate of 100 miles of new asphalt pavement a year. It all started eight years ago when the city decided it needed to refurbish its old streets to accommodate increased traffic and help relieve congestion. To date over 1,000 miles have been modernized, all with smooth, durable asphalt surfacing.

The eyes and ears of the student-instructor team is another facet of the public information program of the Asphalt Industry of Oklahoma. Still in its first year of active public relations to further the use of petroleum asphalt, emphasis was recently directed toward civil engineering students on the campus of Oklahoma A & M college, Stillwater, Oklahoma. The association pointed up the exact and scientific engineering on the recently completed



Turner Turnpike and the new Will Rogers Turnpike now under construction in Northeast Oklahoma. The AIO is composed of members of the state's Asphalt Refiners and Asphaltic Concrete Hot Mix Associations.

Do you know that asphalt is one of our most versatile products—that this inherent characteristic—versatility—permits engineers to build many different kinds of asphalt pavements for all kinds of roads? The narrow asphalt road out in the country and the quiet suburban street, though they provide excellent low-cost service for light traffic, have surfaces far different from the heavy-duty asphalt pavements that carry the heaviest traffic on our main roads. Remember, asphalt is recognized as the most economical high-utility surface for light-traffic roads. Remember, too, that

**ASPHALT PAVES OUR FINEST HIGHWAYS**

# ASPHALT INSTITUTE

## Quarterly

Vol. 8, No. 3, July, 1956

EDITOR

Richard C. Dresser

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## Cover

The rolling countryside of western Maryland is dotted with neat, prosperous farms like this one near Libertytown, with the asphalt road putting farm families within fast, easy driving distance of town and market and school. Three articles in this issue of the Quarterly portray asphalt's vital role in providing the thousands of miles of durable, all-weather secondary roads so essential to the farmer's livelihood and welfare.

Photo: James R. Dunlop



The Asphalt Institute Quarterly is published by The Asphalt Institute, an international, nonprofit association sponsored by members of the asphalt industry to serve both users and producers of asphaltic materials through programs of engineering, research and education.

The Member Companies of the Institute, who have made possible the publication of this magazine, are listed on page 15.

Articles may be reprinted with credit line. Correspondence should be addressed to the Asphalt Institute Quarterly, Asphalt Institute Building, University of Maryland, College Park, Maryland.







**Engineered for smooth, rugged service!**

**ASPHALT**  
FOR HEAVY-DUTY HIGHWAYS

**MAJOR ENGINEERING TRADE MAGAZINES**

**OUT TODAY**  
... big as **LIFE**  
... the big story to help you push **ASPHALT**

**Here's the scoop on A-1 Day Operation Asphalt!**

**THE ASPHALT INSTITUTE**

**Repared with ASPHALT**  
Traffic rolls again on the highway

**THE ASPHALT INSTITUTE**

### THE OIL DAILY

ence the public. This summer, while pleasure driving and tourist travel are at their peak, Institute-sponsored radio programs are being beamed at the motorist four times each week end. The program, "Weather Along the Highways," is being carried coast-to-coast on some 200 stations of the Columbia Broadcasting System. Tied in with these local and regional weather and driving reports is the asphalt pavement story, designed to inform the motorist about pavement design and quality at a time when these factors are at the forefront of his mind.

"Financial Row" is being approached by means of the Wall Street Journal in a series of advertisements demonstrating the financial solidity of asphalt toll roads and expressways.

U. S. News & World Report, generally recognized as America's fastest-growing news and business magazine, is the vehicle by which the Institute hopes to reach the so-called "thought-leader" group. Here again, full-page advertisements have appeared and are being fashioned with a view to stimulating the interest of thoughtful Americans in asphalt-paved highways for superior service and extended economy.

### THE AMERICAN CITY PUBLIC WORKS

#### ENGINEERING PUBLICATIONS

Such influential engineering trade magazines as Engineering News-Record, Civil Engineering, Roads and Streets, American Engineer and Western Construction are carrying one-page and double-spread ads oriented toward the men who design and specify road paving—the highway engineers. Simultaneously, advertisements in American City and Public Works are showing county and municipal engineers the economy and durability of asphalt construction as well as the speed and ease with which asphalt pavement can be applied and maintained. A series of ads in The Oil Daily will be a consistent reminder to the parent petroleum industry of the rising importance of asphalt paving to the increased market for other refinery products.

Finally, a substantial segment of the advertising appropriation has been reserved to each of the five geographical operating divisions of the Institute. These funds are earmarked for local newspaper advertising as special circumstances may arise.



*Photos: U. S. Bureau of Public Roads*

The country school bus makes its morning rounds, transporting farm children safely over a durable, low cost asphalt pavement. State Route 9, West Virginia.



*Photo: Ewing Galloway*

Rural America: the asphalt road has taken it out of the mud and dust. All-weather secondary roads like this one in Vermont have ended the isolated lives of millions of farmers, affording them smooth travel in all weather.

# ASPHALT

got 'em out of the mud

Top: State Route 10 in Mineral County, Nevada, was bumpy, dusty and muddy before improvement in 1953. Bottom: A road-mix surface using slow-curing cutback asphalt gives the road a new lease on life.

*Photos: Nevada State Highway Dept*





An economical, thin asphaltic surfacing over a well-drained foundation provides a fine light-traffic road lasting many years without maintenance. Repairs, when needed, cost little. County Road 308, Frederick County, Maryland.



NO one has benefited more from our system of paved roads nor taken a keener interest in plans for an improved network than the American farmer. His interest embraces not just the lane that passes his front gate but extends to all roads—primary, secondary and urban—along which the millions of trucks that transport his goods to the consumer must roll. And these trucks require smooth, durable paved roads for safe, efficient, economical operation.

But though all roads lead to market, the farmer's chief concern is with the condition of the local rural road that serves his farm and community: the road that carries his produce-filled trucks from his farm to initial market—the road that means the difference between isolation or an active social existence for him and his family.

America's farm families were a remote community before the advent of the motor vehicle and the roads it helped to develop. Confined to his home and fields for days and weeks on end, often seeing only his nearest neighbor, the farmer led a hard, lonely life. His children, if unable to walk to school, didn't go at all. The trip to market by horse and wagon over rutted dirt roads that became quagmires in the rain and bred clouds of dust in dry weather was arduously slow. He lived virtually apart from the affairs of the outside world, held in isolation by an almost total lack of communications.

### THINGS ARE DIFFERENT TODAY

Today this situation is almost completely changed. The farmer is now a leading businessman dealing in a vast and far-flung market. His community is a unified one that has an important voice in the affairs of the entire country. He has easy access to his neighbors and to town. He receives mail regularly as well as reasonably prompt medical attention at home in emergencies. His children are educated and go to school regularly by bus.

The motor vehicle, of course, has had an all-important hand in bringing about this remarkable change in the farmer's way of life. But the automobile and truck require hard-surfaced, all-weather roads on which to be driven efficiently and economically. Fundamentally, then, it is the paved road—the asphalt road—that has brought millions of farmers out of the mud and dust, enabled them to get their trucks safely and speedily to market, their children to school, and their families into an active community life, permitting them the full benefits of American prosperity, progress and society.

Economical asphalt construction has always been the only practical method for providing a paved, all-weather surface for rural secondary roads. Because such roads may be required to

carry only a few hundred cars and trucks a day—and there are many which see much less use—a low-cost pavement is essential. Yet it must be a type of surfacing which will be passable in all seasons and will carry traffic for many years. Maintenance, too, must necessarily be low and rapidly and easily accomplished.

### ASPHALT MEETS REQUIREMENTS

The asphalt road, roadbuilders and farmers know, meets all these requirements both in quality and performance. Many secondary and farm-to-market road pavements are constructed by the economical mixed-in-place method whereby, after grading, draining, and compacting the foundation, liquid asphalt and locally available aggregates are mixed and bladed directly on the road and then smoothed and compacted. Often, a very lightly traveled road will need only an application of asphaltic road oil as a dust palliative. Still another method is to "treat" the road's foundation with liquid asphaltic materials and then "seal" it with a layer of finely crushed aggregate.

With the growth of motor vehicle production and travel, many miles of these low-cost rural roads have been widened and improved to take the extra burden of greatly increased traffic. Often such traffic has demanded the construction of a heavy-duty pavement of hot, plant-mixed asphalt. When this is the case, engineers make full use of the former pavement, which bonds tightly to the new and provides a better, stronger road than one built on an entirely new location. Full conservation of the values of an existing asphalt road through stage construction is a special advantage recognized by farmers and road authorities.

### THERE'S MORE TO BE DONE

Although asphalt has made an inestimable contribution to the prosperity and welfare of the agricultural community, there still remain over two million miles of unpaved roads in the U.S. Nearly all of this mileage is rural, and a great percentage of it serves thousands of farms—inadequately. Much has been done by local, state and federal authorities to put these roads in all-weather condition. The Asphalt Institute and the American Farm Bureau Federation cooperated in a successful campaign in the 1930's to get more farmers out of the mud and onto hard-surfaced roads. Similar programs are now being devised and are carried out by other agencies.

In these plans for vitally needed rural road improvements asphalt is destined to play as dominant a role as it has in the past. For paving primary roads and superhighways or surfacing lightly traveled secondary and farm-to-market roads, versatile asphalt construction has long proved to be the best.



ASPHALT got 'em out of the mud

*The QUARTERLY is indebted to Mr. William F. Steuber, Chief of Public Information for the Wisconsin State Highway Commission, and to Mr. Paul Hartwig, La Crosse County Highway Commissioner, for furnishing much of the material and statistics for this article.*

## The High Development of Local Roads in Wisconsin



A dust-free county trunk in the heart of the dairyland. Dane County, Wisconsin.





**A**GRICULTURE is king in Wisconsin and the dairy cow is queen in the south, central, and western parts of the state. Milk must leave the farm every day in any weather, with trucks traveling an average of 72,000 vehicle miles a day just taking it from the farm to its initial processing plant.

Wisconsin, too, is one of America's best-liked vacation havens. The tourist country starts at Lake Geneva near the southern border, extends through the renowned Wisconsin Dells area and branches off to two large regions of lakes and pines in the northwest and northeast. Local roads bring thousands of vacationers yearly to these secluded spots.

All over the state the little red schoolhouse is giving way to the consolidated school with its better facilities. Over 5,500 school busses operate more than 160,000 miles every school day. Most of this mileage is traveled over town and county roads.

Wisconsin's highway history differs from that of other states in that it is the only one where the counties own the equipment and handle all the maintenance work for the State Trunk Highway System. This enables every one of the 71 counties to have excellent equipment and operators for use on its county roads after state needs are met. It also provides a readily available range of equipment for rental on town roads.

#### **SURFACED MILEAGE EXTENSIVE**

Since highway legislation was introduced some fifty years ago, local roads have received financial aid from the state. Presently 48% of state motor vehicle and motor fuel revenues are returned to local government. The combination of these factors has produced a system of local roads that ranks third in the nation in percentage of mileage surfaced.

Wisconsin today has a 96,289-mile network of public roads

and streets. It consists of 11,300 miles of state trunk highways, 19,200 miles of county trunk highways, 57,500 miles of town roads, 7,800 miles of city and village streets and 491 miles classified as miscellaneous.

Few trips start and end without travel over several of these systems. The farmer may leave his farm on a town road, swing into a county trunk, get onto a state trunk highway, turn off on a city street, and unload his produce at the private platform of a commission house.

Forty years ago in Wisconsin there were only two kinds of thoroughfares for motor vehicles—the "town" roads in the country and the streets in the villages and cities. There were plenty of roads, almost as many miles as there are today, but the motorist had no quick and ready way to choose which of the many routes was the most direct, dependable, or practical for an unfamiliar trip. The state was busy improving sections of road and, like the motorist, often had difficulty selecting the most important.

#### **STATE AND COUNTY SYSTEMS**

In creating the State Trunk System in 1917, the legislature directed that all cities of 5,000 and over and all county seats be connected by main roads, that the roads so selected be marked with uniform signs, and that state road construction be confined to the system. Laid out and marked in 1918, the first State Trunk Highway System had 5,000 miles of roads. Today it is more than double its original mileage.

The county trunk systems, developed seven years later, consist of former town roads that have become principal feeder arteries to the state trunks. The county trunk systems are administered by the counties. Other rural routes remain as land service roads administered by the town boards.

As a dairy and recreational state, Wisconsin started early



A county trunk farm-service highway in late spring. Over a good base, the frost resistant asphalt surface has come through the winter free of raveling or breakup.



Crushed stone in place on Juneau County road before asphalt surfacing. Wisconsin has enormous, widespread sources of high-quality aggregates.



Farm-service county trunk gets a new asphalt road-mix surface.



Travel-plant-mix asphalt surface on Walker road through rural La Crosse County.

in the motor age to improve its local roads. The "get-us-out-of-the-mud" stage brought all-weather surfaces to the State Trunk Highway System in the middle twenties. Even then some town chairmen were proudly reporting, "Every farmer in my town, once he gets off his own driveway, has a road he can depend on in every kind of weather the year around." By the middle thirties the entire State Trunk Highway System was dustless, and many counties could say almost as much for the county trunks. Vacationers in the deer and muskie country, in writing home of their good times, often closed with, "... and the asphalt doesn't end when you leave the state trunk; it winds through the woods right to the cabin door."

#### ASPHALT'S ROLE

Today Wisconsin has a proud record of surfaced mileage on all classes of roads. In La Crosse County, for example, which has a remarkable history of planned highway improvement that began as long ago as 1880, there are many miles of asphalt roads with enviable performance records. Though not quite up to the standards of roads of more recent construction, over 100 miles of surfaces placed more than thirty years ago—surfaces only nine feet wide and penetrated with asphalt—are still giving good service today.

According to U.S. Bureau of Public Roads figures for 1954, the state's mileage of roads paved with flexible and rigid types totaled 29,405, with nearly 26,000 miles having asphaltic surfaces. Close state and local government cooperation made possible the state's excellent network of all-weather roads. Asphalt helped achieve it rapidly and economically.

## Texas Farm Road No. 160

On FM 160, Liberty County, Texas, rice farmers eight years ago drove through this hubcap-deep mud.



Today a soil-asphalt base and surface treatment provide a mudless, dustless road, built at low cost and economically maintained.



**F**ARM-TO-MARKET Road No. 160 in Liberty County, Texas, serves an extensive rice farming area of the southeast part of the state. Rice is grown on the land on both sides of the road and flooding by water released from the fields is a common, periodic occurrence.

On this soggy terrain in an area where roads have a habit of deteriorating rapidly, local engineers recommended and constructed for five miles of FM 160 a soil-asphalt base with asphalt surface treatment. Bearing out the engineers' recommendation, the road's performance over the past several years in extremely adverse conditions has been excellent.

Built 16 feet wide, the soil-asphalt base consists of local sandy soil, 5" thick, stabilized with rapid-curing cutback asphalt, 3.24 gallons per square yard. This is treated with a 200-250 penetration asphalt cement which was applied at the rate of 0.29 gallon per square yard and covered with aggregate, 1 cubic yard to 14 square yards.

The total cost per mile for constructing this very serviceable pavement was less than \$7,000. During the eight fiscal years of its operation, total base and surface maintenance expenditures have averaged only \$50.59 per mile per year. And the rice farmers who take FM 160 slosh through the mud no more.

by Bernard E. Gray

# South Carolina's

## Fine Highway System

SOUTH CAROLINA is blessed with great resources: its fertile tobacco- and cotton-producing lands, its abundant water supplies, its generally mild climate that attracts vacationers in all seasons. To meet transport needs arising from extensive development of these resources in recent years, highway planners have made substantial improvements in the state's 24,000-mile highway system. The big job was undertaken not only to accommodate intra-state traffic but also rapidly increasing cross-state vehicular movement on the main routes between the North and Florida.

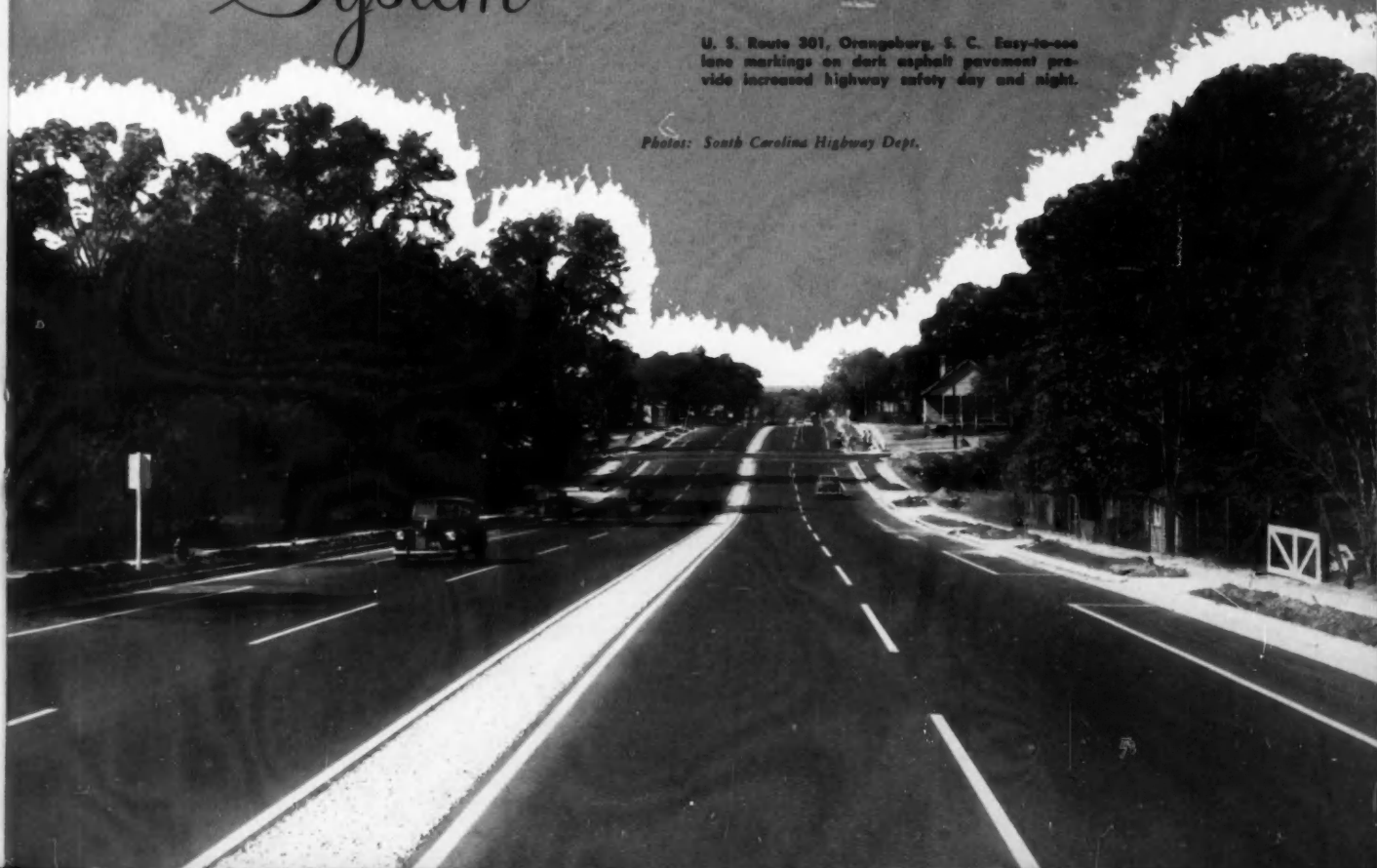
Fortunately for the taxpayer, the State Highway Department for years has been conducting necessary research studies of local aggregates to determine their best use in securing strong foundations and durable surfaces at minimum cost. This has been accomplished largely by construction of asphalt pavements over bases of sand-clay, topsoil and macadam.

The stage development plan, too, one of the unique advantages of asphalt construction, has been followed. Roads built for current traffic can later be improved when the inevitable increases in traffic weight and volume occur, with the earlier construction incorporated in the new improvement.

As a result of this wise planning, South Carolina now has one of the finest highway systems in the country. Of the present primary system, 5,800 miles have bituminous surfaces, while on the secondary, over 9,000 miles have received bituminous surface treatments so widely known for their excellence. Many of these treatments were so well constructed that 12 to 15 years have elapsed before re-treatment, although 8 to 10 years is the common experience. Some addi-

U. S. Route 301, Orangeburg, S. C. Easy-to-see lane markings on dark asphalt pavement provide increased highway safety day and night.

Photos: South Carolina Highway Dept.



tional 6,000 miles have untreated sand-clay or graded soil surfaces which carry only light traffic but which are receiving treatment as it becomes necessary.

### HEAVY DUTY CONSTRUCTION

Heavy-duty highways in the Palmetto State have experienced tremendous traffic increases in recent years, not only in the rapidly expanding industrial areas but also on the through North-South routes such as U. S. Routes 1, 17 and 301. All carry great volumes of heavy truck traffic.

Because the terrain of South Carolina varies considerably from the low coastal area to the mountainous regions in the western part of the state, a great variety of construction conditions are to be found. Even though no frost action exists in this state, nor in others farther south, the fact remains that the maintenance of maximum support in a foundation is related directly to its optimum moisture content, which is governed by the height of a completed pavement surface above ground-water level. To control this moisture content and to insure adequate load support and smoothness of the completed pavement, it is common practice in South Carolina to build up an embankment upon which the pavement is placed. Often only a foot's variation in elevation of the embankment above the water table may mean the difference between an entirely



Placing 10" sand-asphalt base on U. S. 17, north of Ridgeland.



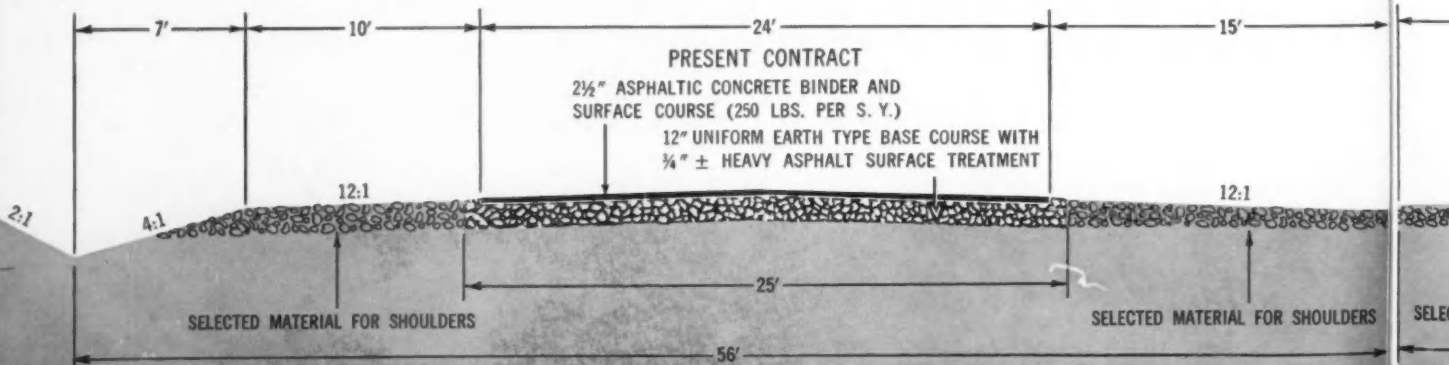
U. S. 301 at Olanda before (above) and after economical widening and resurfacing with asphalt.

satisfactory pavement twelve months of the year and one which may be deformed at certain seasons when the water table is at maximum height.

Highway officials have determined through research studies these variations in the water table level throughout the state. Pavement structures are designed in accordance with these findings. Here is the construction procedure (see also cross-section):

1. The roadbed is placed as an embankment and sub-grade soils are compacted in strict accordance with the principles of soil mechanics to obtain a uniform 95% density throughout the length of the project.
2. On the embankment is constructed a base course, composed usually of either crusher-run macadam 10" thick or a selected earth type, such as topsoil or sand-clay,

### CROSS SECTION—HEAVY-DUTY CONSTRUCTION





12" thick. To insure full edge stability the base is built 6" wider than the surface. When placed, each layer of the base course is bladed, scarified, watered and rolled to obtain thorough consolidation and compaction to 100% density. It is then given a final light blading to exact contour and swept lightly.

3. To the base is applied a surface treatment consisting of a prime coat (.35 gal. per sq. yd.) and a seal coat (.4 gal. per sq. yd.) covered with crushed aggregate 30 to 32 lbs. per sq. yd.

4. The road is opened to traffic for a period of several weeks, after which weak areas are repaired. Placement of heavy-duty asphalt pavement (binder, 150 lbs. per sq. yd., and surface, 100 lbs. per sq. yd.) follows.

#### SAND-ASPHALT BASES ALSO EMPLOYED

In some areas, where neither stone nor selected earth is economically available, sand-asphalt is utilized in the base. The mixture contains approximately 4.5% asphalt cement and is placed in 3 layers to a compacted depth of 10". A light prime coat is applied just prior to placement of the heavy-duty asphalt pavement.

Both steelfaced and pneumatic rollers do the base compaction. Use of the latter in this work has greatly improved

the uniformity of foundation construction as such rolling more nearly approximates the kind of load distribution experienced under traffic.

Toughness, in addition to stability, is an essential pavement requirement, and particular attention has been given to it in current design. For the heavy-duty asphalt pavement the Marshall tests are used for control. The contractor submits his proposed job-mix formula to the laboratory but is allowed considerable discretion as to selection of aggregate to produce the desired mix. A 60-70 penetration asphalt is used in the binder mixture with 85-100 penetration in the surface course. This has seemed to be the most satisfactory grade of cement for the particular aggregates employed.

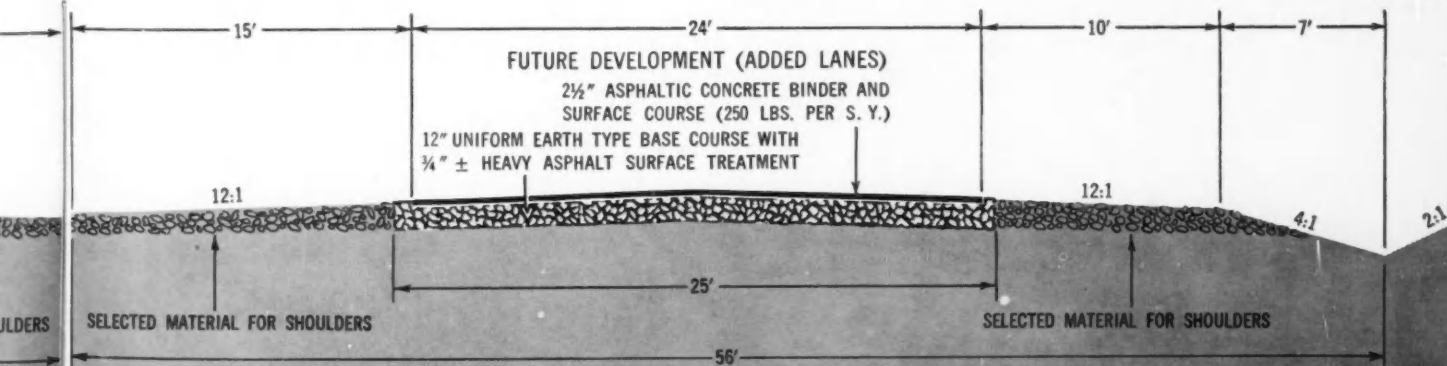
#### ASPHALT PAVING ECONOMY

Even in these days of higher costs, the economy of these designs is apparent, with foot-thick mineral aggregate foundations costing about \$1.20 per sq. yd., sand-asphalt about \$1.35, and the heavy-duty asphalt surface costing less than \$1.00 per sq. yd., a total of \$2.20 to \$2.35 for finished heavy-duty pavements. With this economy it is little wonder that bituminous construction constitutes all present-day primary highway paving in the Palmetto State. South Carolinians consider themselves fortunate indeed to have such an excellent highway system at such moderate cost.

Eight lanes of rugged asphalt pavement provide freer and faster movement for increased traffic in Greenwood. Picture at left is view of Main Street in 1944, before improvement.



#### CONSTRUCTION, SOUTH CAROLINA





HERBERT SPENCER

## Retires from Asphalt Institute

ON JULY 1, 1956, Herbert Spencer, one of the founders of The Asphalt Institute, retired from his post as Division Engineer of the institute's Atlantic-Gulf Division. He will continue, during his retirement, to serve the Institute in a consulting capacity, completing a history of the asphalt industry including the 36-year-old Institute itself.

The Herbert Spencer story covers a full half-century of American construction history. Following his graduation from Rensselaer Polytechnic Institute, the young Civil Engineer had a hand in the building of Manhattan's original subway, now identified as the Lexington Avenue - I.R.T. subway. From 1905 to 1908 he was employed by what is now the New York State Department of Public Works on the construction of the original Barge Canal and as Resident Engineer with the newly created State Highway Department on road construction at Watertown, New York and on Long Island.

During the years spent on the construction of roads on Long Island, Spencer watched with growing concern the destruction of the waterbound macadam roads by the then fast developing automobile traffic. California at that time had experimented with the use of heavy asphalt road oil and an inspection of what they were doing soon convinced Spencer that here was the solution to the problem in the east. The result was the introduction of asphalt road oils for dust elimination, soon adopted by all states. In 1908, many highway engineers were becoming interested in the development of a more substantial type than a waterbound macadam road, and experiments conducted in several eastern states convinced them that an asphalt binder penetrated into the macadam stone would provide a durable and economical highway. This soon became standard practice in many parts of the United States and resulted in the construction of what is now known as the Penetration Macadam type of pavement.

The petroleum industry at this time became aware of the potential uses of asphalt for highway construction, and in 1908 Mr. Spencer became associated with the Standard Oil Company of New York as Development Engineer to assist in working out the various grades of asphalt required for the asphalt business and for the fast-growing automobile travel. In 1912 he was transferred to the Standard Oil Company of New Jersey and served as Consulting Engineer for this organization for many years, developing both specifications for the asphalt itself, and particularly its uses in highway construction. This was interrupted during the years of World War I when Spencer served as Captain and Commanding Officer of Company "H," 23rd U.S. Army Engineers, the road building unit of the American Expeditionary Forces, on the construction of roads in the advanced sector of France.

In 1919 the original Asphalt Association, which ten years later became The Asphalt Institute, was founded. Serving as Director of the infant organization, Mr. Spencer materially assisted in the formulation of the policies that have helped build the Institute to world-wide prominence. In 1941 he severed his connection with the asphalt-producing industry to become the Institute's first full-time President. He later served as its Secretary for many years and then as Division Engineer of the Atlantic-Gulf Division with headquarters in New York City.

Having been intimately associated with the growth of the asphalt business since its early days, no man is better equipped than Herbert Spencer to compile an authoritative history of the asphalt industry. His work is bound to become an invaluable source book and a welcome addition to American progress. Its completion will mark still another outstanding milestone in the brilliant career of a man who, more than any other, merits the title "Mr. Asphalt Institute."

In recognition of Mr. Spencer's devoted service to the industry, the Herbert Spencer Fellowship, sponsored by the Esso Standard Oil Company, has been established for the school year 1956-1957 at Cornell University, enabling a graduate civil engineer to take special research courses in asphalt and its uses.



## THE ASPHALT INSTITUTE

EXECUTIVE OFFICES AND LABORATORIES  
Asphalt Institute Building  
University of Maryland  
College Park, Maryland

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